Claims

[c1]

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A control system for an automotive vehicle having a steering actuator comprising:

- a plurality of sensors generating a plurality of signals corresponding to a dynamic condition of the vehicle; and
- a controller coupled to the plurality of sensors, said controller determining a lateral force in response to measured vehicle conditions, determining a slip angle in response to measured vehicle conditions, determining a first steering actuator angle change to decrease the slip angle until the lateral force increases, thereafter, determining a second steering actuator angle change to increase the slip angle until the lateral force decreases.
- [c2] A system as recite in claim 1 wherein said steering actuator comprises a front right wheel actuator and a front left wheel actuator.
- [c3] A system as recite in claim 2 wherein said front right wheel steering actuator and said front left steering actuator are independently controllable.
- [c4] A system as recite in claim 3 wherein said controller generates a front right control signal and a front left control signal in determining a first steering actuator angle change and determining a second steering actuator angle change.
- [c5] A system as recite in claim 1 wherein said steering actuator comprises a rear steering actuator and a front steering actuator.
- [c6] A system as recite in claim 1 wherein said controller determines a rear steering control signal in determining a first steering actuator angle change and determining a second steering actuator angle change.
- [c7] A method of controlling a vehicle having a steering actuator comprising:

 determining a lateral force in response to measured vehicle conditions;

 determining a slip angle in response to measured vehicle conditions;

 determining a first steering actuator angle change to decrease the slip angle
 until the lateral force increases;

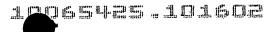
 controlling the steering actuator in response to the first steering actuator



thereafter, determining a second steering actuator angle change to increase the slip angle until the lateral force decreases; and controlling the steering actuator in response to the second steering actuator change angle.

- [c8] A method as recited in claim 7 wherein determining a first steering actuator angle change to decrease the slip angle until the lateral force increases is performed independent of a handwheel position.
- [c9] A method as recited in claim 7 wherein controlling the steering actuator in response to the first steering actuator change angle and controlling the steering actuator in response to the second steering actuator change angle comprises controlling a front steering actuator.
- [c10] A method as recited in claim 7 wherein controlling the steering actuator in response to the first steering actuator change angle and controlling the steering actuator in response to the second steering actuator change angle comprises controlling a rear steering actuator.
- [c11] A method as recited in claim 7 wherein controlling the steering actuator in response to the first steering actuator change angle and controlling the steering actuator in response to the second steering actuator change angle comprises controlling a front right steering actuator.
- [c12] A method as recited in claim 7 wherein controlling the steering actuator in response to the first steering actuator change angle and controlling the steering actuator in response to the second steering actuator change angle comprises controlling a front left steering actuator.
- [c13] A method of controlling a vehicle having a steering actuator comprising:

 determining a lateral force in response to measured vehicle conditions; and
 controlling the steering actuator in response to the lateral force to maximize the
 lateral force.
- [c14]
 A method as recited in claim 13 wherein controlling the steering actuator





[c15] A method as recited in claim 13 wherein controlling the steering actuator comprises changing a steering angle to increase the lateral force until the lateral force decreases, then changing the steering angle until the lateral force increases.